

CLAIMS

1. Display screen including:

- light emitters (4, 6, 8) arranged as rows of  
5 light emitters and columns of light emitters to  
form an array of light emitters,
- a silicon substrate (62) on which control means  
10 (2, 10, 20, 30, 40, 42, 44, 46, 48, 50) to  
control the emissions of the light emitters are  
15 fabricated, the said control means including:
  - means (12, 22, 32) for powering the light  
emitters (4, 6, 8),
  - a plurality of addressing electrodes (40)  
arranged according to the columns of light  
15 emitters, and intended to transmit a voltage  
( $V_D$ ) representing an image datum to each  
column of light emitters,
  - a plurality of selection electrodes (42, 44,  
20 46) arranged according to the rows of light  
emitters, and intended to transmit a  
selection signal ( $V_{S42}$ ,  $V_{S44}$ ) to each row of  
light emitters,
  - a plurality of modulation transistors (14,  
24, 34), each associated with a light emitter  
25 of the array, the said modulation transistors  
including a gate electrode intended to be  
connected to an addressing electrode (40) and  
two current-carrying electrodes, each  
modulation transistor intended to have a  
30 drain current pass through it to power the  
said light emitter for a voltage between its  
gate electrode and one of its current-  
carrying electrodes that is greater than or  
equal to a threshold trigger voltage ( $V_{th}$ ),  
35 the said modulation transistors being  
arranged in columns associated with the

columns of light emitters and being aligned on the substrate (62) according to a guiding line (72),

- 5 - a load capacitor (16, 26, 36) connected to the terminals of each modulation transistor (14, 24, 34) and intended to set an electric potential at the gate electrode of the associated modulation transistor, and
- 10 - a plurality of compensating transistors (48) intended to compensate for the threshold trigger voltage of the modulation transistors by adjusting the charge on the capacitor, characterized in that a single compensating transistor (48) is connected to all the modulation transistors (14, 24, 34) of a given column and is intended to compensate for the threshold trigger voltages of all the said modulation transistors (14, 24, 34) of this column, and in that the said compensating transistor (48) is formed in the extension of the line-arrangement of the said modulation transistors (14, 24, 34) of a given column according to the said same guiding line (72).

25 2. Display screen according to Claim 1, characterized in that the control means do not include any means allowing the flow of current from any one of the addressing electrodes (40) to the means (12, 22, 32) for powering the light emitters.

30 3. Display screen according to either of Claims 1 and 2, characterized in that the control means include at least one voltage generator connected to one or to each addressing electrode (40) in order to transmit a voltage ( $V_D$ ) representing an image datum.

4. Display screen according to any one of Claims 1 to 3, characterized in that the compensating transistor (48) of each column of light emitters includes two current-carrying electrodes, each current-carrying electrode being connected in series between the addressing electrode (40) of this same column and the modulation transistors (14, 24, 34) of this same column.
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5. Display screen according to any one of Claims 1 to 4, characterized in that each compensating transistor (48) includes a gate electrode and two current-carrying electrodes, the gate electrode of each compensating transistor (48) being connected to the gate electrode of all the modulation transistors (14, 24, 34) of the associated column, in that one current-carrying electrode (51) of each compensating transistor (48) is connected to the addressing electrode (40) of the associated column of light emitters, and in that the other current-carrying electrode of each compensating transistor is connected to its gate electrode.
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6. Display screen according to any one of Claims 1 to 5, characterized in that the said modulation transistors (14, 24, 34) and the said associated compensating transistor (48) are fabricated on a polycrystalline silicon substrate obtained by heating an amorphous silicon substrate (62), using a laser beam (60), the said beam being intended first to heat a first rectangular heating surface (66) of the substrate, then to move in a direction of movement (68) and then to heat a second rectangular heating surface (70),
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and in that the said modulation transistors (14, 24, 34) associated with the light emitters of a given column and the associated compensating transistor are aligned in one and the same heating 5 surface (66), the guiding alignment line (72) extending approximately perpendicularly to the direction of movement (68) of the laser beam (60).

7. Display screen according to any one of the 10 preceding claims, characterized in that the said modulation transistors (14, 24, 34) and the said associated compensating transistor (48) each include a channel between two layers of doped material, the said channel being connected to their gate electrode, and in that the channel of 15 the modulation transistors (14, 24, 34) of a column and the channel of the associated compensating transistor have a main axis approximately parallel to the said guiding line 20 (72).
8. Display screen according to any one of the preceding claims, characterized in that the control means (2, 10, 20, 30, 40, 42, 44, 46, 48, 25 50) include initialization means (50) for initializing the load capacitors (16, 26, 36) intended to discharge all the load capacitors connected to the modulation transistors of a column. 30
9. Display screen according to Claim 8, characterized in that the initialization means (50) include an initialization transistor (50) having a gate electrode and two current-carrying electrodes, one 35 current-carrying electrode of the said initialization transistor (50) being connected to

the gate electrode of the modulation transistors (14, 24, 34) of the said column, the gate electrode of the said initialization transistor (50) being connected to a current-carrying electrode and to the addressing electrode (40) of a column of light emitters.

- 5 10. Display screen according to Claim 8, characterized in that the initialization means (50) include a diode, the cathode of which is connected to the gate electrode of the modulation transistors (14, 24, 34) and the anode of which is connected to the addressing electrode (40) of a column of light emitters.
- 15 11. Display screen according to any one of the preceding claims, characterized in that the control means (2, 10, 20, 30, 40, 42, 44, 46, 48, 50) include a plurality of selection transistors (18, 28, 38) having a gate electrode and two current-carrying electrodes, each selection transistor having one current-carrying electrode connected to a modulation transistor (14, 24, 34), a gate electrode connected to a selection electrode (42, 44, 46) and one current-carrying electrode connected to the compensating transistor (48) of a column of light emitters.
- 20 25 12. Display screen according to any one of the preceding claims, characterized in that the light emitters (4) are organic electroluminescent diodes.
- 30 35 13. Method for driving a display screen according to any one of Claims 1 to 12, characterized in that the method includes a step for applying a voltage

(V<sub>D</sub>) representing an image datum to each addressing electrode (40) of each column of light emitters (4, 6, 8).